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AUTHOR	Ivers, Karen S.
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ABSTRACT

This study examines a training module designed to increase teachers' technology proficiencies. In the process, the study also explores a self-assessment type measure and its value in relationship to teachers' use of technology in their classrooms. It examines pre- and posttest scores of K-12 teachers' perceptions of their level of technology proficiencies prior to and after taking the training module. This study addresses the following questions: (1) How do California K-12 educators perceive their level of technology proficiency in the areas of General Computer Knowledge and Skills, Internet, Email, Word Processing, Publishing, Databases, Spreadsheets, Presentation Software, and Instructional Technology-prior to and after their participation in an educational technology professional development program? (2) How do teachers' perception of their level of technology proficiency affect their use of technology in the classroom? Findings of this study suggest that teachers may consider themselves as "intermediate users" given that they can use the computer as a teaching/management tool-to generate worksheets, create a presentation, and record grades. The study provides insight into two areas related to the need to better prepare educators to effectively use technology: teachers' perceptions of their own level of technology proficiencies and possible methods of instruction that may help to better prepare teachers in instructional technology. (AEF)

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ED 467 095

Changing Teachers' Perceptions and Use of Technology in the Classroom

Dr. Karen S. Ivers

California State University, Fullerton

Purpose of the Study

This study examines a training module designed to increase teachers' technology proficiencies. In the process, the study also explores a self-assessment type measure and its value in relationship to teachers' use of technology in their classroom. It examines pre- and posttest scores of K-12 teachers' perceptions of their level of technology proficiencies prior to and after taking the training module. This study addresses the following questions:

1. How do California K-12 educators perceive their level of technology proficiency in the following areas: General Computer Knowledge and Skills, Internet, Email, Word Processing, Publishing, Databases, Spreadsheets, Presentation Software, and Instructional Technology – prior to and after their participation in an educational technology professional development program?
2. How do teachers' perception of their level of technology proficiency affect their use of technology in the classroom?

Theoretical Framework

Researchers continue to report that there is a tremendous lack of technological proficiency among educators, and that the need and desire for educational technology development is great (ISTE, 1999; NCES, 1999; OTA, 1995; Willis, Thompson, Sadera, 1999). Both national and state standards have been established to improve teachers' technological proficiencies: the International Society for Technology in Education (ISTE) recently published the National Educational Technology Standards for Teachers (ISTE, 2000), and the National Council for Accreditation of Teacher Education (NCATE), as well as several state accreditation agencies (i.e., the California Commission on Teacher Credentialing), now require teacher education programs to integrate technology instruction into their preservice programs. The California Technology Assistance Project (CTAP), a statewide organization supporting schools and districts in the implementation of technology, designed proficiency profiles aligned with state requirements set by the California Commission on Teacher Credentialing the California (CCTC) to assist in the professional development process.

Although the California Commission on Teacher Credentialing now requires that technology be integrated into preservice education, additional educational technology competencies still need to be addressed. In addition, these requirements are not applicable to California's current teachers. Some may need to take a computer course to clear their credential, but, again, research shows that such courses do little to prepare teachers to effectively integrate technology into instruction (OTA, 1995). Teachers continue to report that they feel ill-prepared to teach with technology. Hence, current teachers – those that serve as mentors and role models for our preservice teachers – are at a disadvantage because they do not have an adequate technology background. The lack of technology

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proficient role models is a disadvantage for preservice teachers, as well as for the children in the classroom.

NCATE's Task Force on Technology and Teacher Education reports that the ability to effectively employ technology in the classroom will require new understandings, new approaches, and new forms of professional growth (NCATE, 1997). Schrum (1999) examines several models of professional development, noting that those with presentation of theory, clear demonstrations, practice with feedback, coaching, and on-going follow-up are more likely to produce change in how teachers use technology in their classrooms than traditional models of staff development. She describes traditional models as one-day seminars usually hosted by an expert or after school workshops that focus on "hot" topics without follow-up, support, or direction. Brand (1998) recommends that training be geared toward teachers' perceived needs and goals.

Method

Two hundred K-12 teachers from 40 different schools across Orange County, California, participated in a state sponsored educational technology professional development program, designed to help teachers integrate technology into their instruction. The program, the Instructional Technology Partnership (ITP) Program, was hosted by California State University, Fullerton (CSUF), the Orange County Department of Education (OCDE), Anaheim City School District, and the California Technology Assistance Program (CTAP). The ITP program was designed to provide 40 hours of face-to-face training over a two-week period, followed by 80 hours of individual follow-up. Prior to the initial training, teachers completed an online self-assessment of their technology skills in the following areas: General Computer Knowledge and Skills, Internet, Email, Word Processing, Publishing, Databases, Spreadsheets, Presentation Software, and Instructional Technology (integrating technology across the curriculum). A posttest was completed at the end of the 80 hours of follow-up. Both pre- and posttest were conducted at the CTAP2 assessment site at http://ctap2.iassessment.org/. The CTAP2 site provided the mean score for each category of the pre-test and posttest.

The initial training provided teachers with opportunities to increase their technology skills within various applications and how these applications could be used throughout different subject areas. The follow-up hours were designed to assist teachers meet their own individual learning goals. Teachers could choose from online courses focusing on the Internet, face-to-face courses examining video production, and so on. Teachers were also responsible for attending additional educational technology professional development opportunities provided by their district, county, or other professional organization.

Teachers were asked to keep a portfolio of their work, including computer-based lessons and sample work conducted in their classroom. The portfolios, along with observations, were used to explore the relationship between a teachers' perception of their level of technology proficiency and their use of technology in the classroom. A sample of 54 portfolios was rated prior to looking at individuals' posttest self-assessments. Portfolios were placed into three categories. Those placed in category one demonstrated the teachers' ability to integrate a variety of technology applications across a variety of subject areas, use technology as a teaching/management tool, and use technology as an instructional tool for students – including student samples. Category two portfolios

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demonstrated the teachers' ability to use technology as a teaching/management tool and as an instructional tool in a subject area, i.e., use of a writing program with students. Category three portfolios demonstrated the teachers' ability to use technology as a teaching/management tool.

Results

How do California K-12 educators perceive their level of technology proficiency in the following areas: General Computer Knowledge and Skills, Internet, Email, Word Processing, Publishing, Databases, Spreadsheets, Presentation Software, and Instructional Technology?

Participants' responses to the pre/posttest are categorized in the following categories: Introductory (little or no experience, a rating of 0 to 1), Intermediate (some experience, a rating of 1.1 to 2), and Proficient (a lot of experience, a rating of 2.1 to 3). Pretest self-assessment reports revealed that participants' knowledge base in Word Processing was the highest (somewhat proficient, with a mean rating of 2.4), followed by General Computer Knowledge and Skills (2.1). The mean ratings for all other categories fell into the Intermediate range. Following the 120 hours of training, participants completed the online assessment again. Mean ratings jumped to the Proficient range in all areas. Increases in proficiency categories were:

General Knowledge 14%

Internet 22%

Email 19%

Word Processing 9%

Publishing 15%

Databases 24%

Spreadsheets 20%

Presentation Software 21%

Instructional Technology 19%

How do teachers' perception of their level of technology proficiency affect their use of technology in the classroom?

The evaluation of end-of-the-year portfolios suggests that those teachers who consider themselves highly proficient in all or most areas integrate a variety of technology applications throughout various subject areas. Their portfolios show their own use of technology as a teaching/management tool, as well as an instructional tool for students – including student samples. Those who consider themselves somewhat proficient or highly intermediate, show evidence of using technology as a teaching/management tool and an instructional tool, with beginning uses of technology with students. The portfolios of those who considered themselves intermediate tended to include examples of teacher generated worksheets, presentations, and little (if any) student computer use. Testimonials and teacher vignettes also indicate that the more confident teachers feel about using technology, the more likely they will apply what they have learned in the classroom, as well as pursue additional learning opportunities.

Conclusion

Researchers report that teachers do not feel prepared to teach with technology, yet the pretest data of this study suggests that the majority of teachers rate themselves as "intermediate users" of most technologies. The findings of this study suggest that teachers may consider themselves as "intermediate users" given they can use the computer as a teaching/management tool – able to use the computer to generate worksheets, create a presentation, and record grades. "Intermediate users" do not appear confident in using the computer as a tool for student work. This confirms researchers' findings that teachers may not feel prepared to teach with technology – given we define "teaching with technology" a process more than generating worksheets or lecturing in front of a PowerPoint presentation.

As mentioned, those teachers who reported themselves highly proficient in all or most areas integrate a variety of technology applications throughout various subject areas, including examples how they had their students use technology as a thinking and creativity tool. This may better define what researchers consider "teaching with technology."

Researchers warn that self-assessment type measures are only accurate to the degree that the self-perceptions are correct and to the degree that the person is willing to express them honestly (Borg and Gall, 1989). In this study, teachers' self-assessment of their level of technology proficiencies appears to be correct and related to their use of technology in the classroom. Furthermore, their posttest self-assessments and portfolios reflect the impact or value of the educational technology training model used in this study and recommended by researchers.

Importance of the Study

Researchers continue to report the need to better prepare educators to effectively use technology. This study provides insight into two areas related to this need: teachers' perceptions of their own level of technology proficiencies and possible methods of instruction that may help to better prepare our teachers in instructional technology. The online self-assessment survey provided by CTAP2 is one model that appears to help teachers identify their strengths and weaknesses in various areas of technology. In turn, teachers can pursue training modules that meet their own individual needs, such as the Instructional Technology Partnership Program used in this study.

Several variables may affect the use of computers in the instruction, besides teachers' perception of their level of technology proficiency. These include availability of computers in the classroom, computer lab time, Internet access, and so on. Given the tools, however, teachers must also be given the skills and confidence to effectively integrate technology into their classrooms. Only then will they be able to use technology to help students learn, create, think, research, and express the multi-facets of their abilities and knowledge – or "teach with technology." It is important to identify teachers' needs and to create training modules that support teachers' learning requirements. Only then will we change how teachers use technology in their classrooms.

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